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PART Env-Ws 382 DISINFECTANT/DISINFECTION BYPRODUCTS RULE

Statutory Authority: RSA 485:3

Env-Ws 382.01 Purpose.

(a) The purpose of these rules is to establish procedures and standards for the control of disinfectant residuals, disinfection byproducts, and disinfection byproduct precursors by public water system owners.

(b) The requirements of this part constitute national primary drinking water regulations as defined in 40 CFR 141.1.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.02 Applicability. This part shall apply to:

(a) The owner of a community or non-transient non-community water system adding a chemical disinfectant to the water in any part of the treatment process; and

(b) The owner of a community, non-transient non-community or transient non-community water system adding chlorine dioxide as a disinfectant or oxidant to the water in any part of the treatment process.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.03 Definitions.

(a) "Blended sample" means a water quality sample taken from an active drinking water source which operates simultaneously or alternates automatically between pump operating cycles, and from which the discharge is combined before entering the water supply distribution system, pursuant to Env-Ws 321.11.

(b) "Community water system" means "community water system" as defined in RSA 485:1-a, I, namely "a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents."

(c) "Dissolved Organic Carbon (DOC)" means dissolved organic carbon in mg/L measured using the same methods as total organic carbon on a sample that has been passed through a 0.45 µm pore diameter filter.

(d) "Enhanced coagulation" means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

(e) "Enhanced softening" means the improved removal of disinfection byproduct precursors by precipitative softening.

(f) "Granular activated carbon (GAC10)" means granular activated carbon filter beds with an empty-bed contact time of 10 minutes, based on average daily flow and a carbon reactivation frequency of every 180 days.

(g) "Haloacetic acids five (HAA5)" mean the sum of the concentrations in milligrams per liter (mg/L), rounded to 2 significant figures after addition, of the haloacetic acid compounds which are monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid.

(h) "Liters per milligram-meter (L/mg-m)" means the unit of measure of specific ultraviolet absorption (SUVA).

(i) "Maximum residual disinfectant level (MRDL)" means a level of a disinfectant added for water treatment that cannot be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects.

(j) "Maximum residual disinfectant level goal" (MRDLG) means the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety.

(k) "Non-transient non-community water system" means "non-transient non-community water system" as defined in RSA 485:1-a, XI, namely "a system which is not a community water system and which serves the same 25 people, or more, over 6 months per year."

(l) "Paired samples" means samples collected and analyzed for total organic carbon (TOC) in the source water prior to any treatment at the same time samples are collected and analyzed for TOC in the treated water.

(m) "Specific Ultraviolet Absorption (SUVA)" means an indicator of the humic content of water obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nm ( $UV_{254}$ ) in  $m^{-1}$  by its concentration of dissolved organic carbon (DOC) in mg/L.

(n) "Surface Water/Groundwater Under the Influence of Surface Water System (SW/GWUDISW)" means a public water system using surface water or ground water under the direct influence of surface water as a source that is subject to the requirements of this part.

(o) "Transient non-community water system" means a "transient non-community water system" as defined in Env-Ws 302.02 (bt), namely "a non-community water system that does not regularly serve at least the same 25 persons over 6 months per year."

(p) "Total organic carbon" (TOC) means total organic carbon in mg/L measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to 2 significant figures.

(q) "Treatment plant" means, for the purposes of this part, the location at which a disinfectant is added to well water or surface water.

Source. (See third Revision Note at chapter heading Env-Ws 300) #7735, eff 8-2-02

#### Env-Ws 382.04 Compliance Dates.

(a) Unless otherwise noted, the owner of a community water system or non-transient non-community water system shall comply with the following:

(1) The owner of a SW/GWUDISW system serving 10,000 or more persons shall comply with this part;

- (2) The owner of a SW/GWUDISW system owner serving fewer than 10,000 persons shall comply with this part beginning January 1, 2004; and
  - (3) The owner of a system using only ground water not under the direct influence of surface water shall comply with this part beginning January 1, 2004.
- (b) The owner of a transient non-community water system owner shall comply with the following:
- (1) A SW/GWUDISW system serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant shall comply with the requirements for chlorine dioxide in this part.
  - (2) A SW/GWUDISW system serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant shall comply with the chlorine dioxide and chlorite requirements specified in this part beginning January 1, 2004; and
  - (3) A system using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant shall comply with the chlorine dioxide requirements specified in this part beginning January 1, 2004.
- (c) The owner of a water system who is installing granulated activated carbon or membrane technology to meet the requirements specified in Env-Ws 317.70 may submit a written request to the department for an extension to comply with the applicable dates identified in (a) and (b) above.
- (d) The written request shall include:
- (1) The system name;
  - (2) The system EPA number;
  - (3) A full explanation of why an extension is necessary;
  - (4) Proposed alternative treatment technologies; and
  - (5) Demonstration of hardship if the rule is adhered to.
- (e) The department shall respond to the extension request in writing and shall approve the request if it finds that the alternative(s) proposed protects human health and the environment.
- (f) In granting the extension, the department shall:
- (1) Set a schedule for system compliance;
  - (2) Specify interim measures that a system shall take; and
  - (3) Set a date for compliance which shall be no later than December 31, 2003.
- (g) A system's failure to meet the deadlines established in the schedule or failure to meet the interim requirements shall be considered a violation of Env-Ws 300.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.05 Increasing Residual Disinfectant Levels.

(a) Notwithstanding the MRDLs specified in Env-Ws 317, a system subject to this part may increase the distribution system residual disinfectant levels of chlorine or chloramines, but not chlorine dioxide, to a level and for a time necessary to protect public health and to address specific microbiological contamination problems caused by circumstances which include, but are not limited to, distribution line breaks, storm run-off events, source water contamination events, or cross-connection events.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.06 Analytical Requirements.

- (a) A water system shall use the analytical methods specified in Env-C 303.04.
- (b) The following documents are incorporated by reference:
- (1) EPA Method 552.1 set forth in “Methods for the Determination of Organic Compounds in Drinking Water-Supplement II,” USEPA, August 1992;
  - (2) EPA Methods 502.2, 524.2, 551.1, and 552.2 set forth in “Methods for the Determination of Organic Compounds in Drinking Water-Supplement III,” USEPA, August 1995;
  - (3) EPA Method 300.0 set forth in “Methods for the Determination of Inorganic Substances in Environmental Samples,” USEPA, August 1993;
  - (4) EPA Method 300.1 set forth in “Determination of Inorganic Anions in Drinking Water by Ion Chromatography, Revision 1.0,” USEPA, 1997;
  - (5) Standard Methods 4500-Cl D, 4500-Cl E, 4500-Cl F, 4500-Cl G, 4500-Cl H, 4500-Cl I, 4500-ClO<sub>2</sub> D, 4500-ClO<sub>2</sub> E, 6251 B, and 5910 B set forth in “Standard Methods for the Examination of Water and Wastewater, 19th Edition,” American Public Health Association, 1995;
  - (6) Standard Methods 5310 B, 5310 C, and 5310 D set forth in “Supplement to the 19th Edition of Standard Methods for the Examination of Water and Wastewater,” American Public Health Association, 1996; and
  - (7) ASTM Method D 1253-86 set forth in “Annual Book of ASTM Standards, Volume 11.01,” American Society for Testing and Materials, 1996 edition.
- (c) Disinfection byproducts shall be measured by the following methods:

Table 382-1

APPROVED METHODS FOR DISINFECTION BYPRODUCT COMPLIANCE MONITORING

Methodology <sup>(2)</sup>	EPA Method	Standard Method	Byproduct Measured <sup>(1)</sup>			
			TTHM	HAA 5	Chlorite <sup>(4)</sup>	Bromate
P&T/GC/EICD & PID	502.2 <sup>(3)</sup>		X			

P&T/GC/MS	524.2		X			
LLE/GC/ECD	551.1		X			
LLE/GC/ECD		6251 B		X		
SPE/GC/ECD	552.1			X		
LLE/GC/ECD	552.2			X		
Amperometric Titration		4500-ClO <sub>2</sub> E			X	
IC	300.0				X	
IC	300.1				X	X

(d) The following notes shall apply to Table 382-1:

(1) X shall indicate department approval for measuring specified disinfection byproduct;

(2) Abbreviations shall be as follows:

- a. "P&T" means purge and trap;
- b. "GC" means gas chromatography;
- c. "EICD" means electrolytic conductivity detector;
- d. "PID" means photoionization detector;
- e. "MS" means mass spectrometer;
- f. "LLE" means liquid/liquid extraction;
- g. "ECD" means electron capture detector;
- h. "SPE" means solid phase extractor; and
- i. "IC" means ion chromatography;

(3) If total trihalomethanes (TTHMs) are the only analytes being measured in the sample, then a PID shall not be required;

(4) Amperometric titration may be used for routine daily monitoring of chlorite as specified in Env-Ws 382.10 at the entrance to the distribution system; and

(5) Ion chromatography shall be used for routine monthly monitoring of chlorite and additional monitoring of chlorite in the distribution system.

(e) Analysis for disinfection byproducts shall be conducted by a laboratory that has received accreditation by the department.

(f) To receive accreditation by the department, a laboratory shall perform analyses of performance evaluation samples as specified in Env-C 306.

(g) Chlorite samples collected daily at the entrance to the distribution system pursuant to Env-Ws 382.10 shall be measured by, or under the supervision of, an operator certified under Env-Ws 367.

(h) Residual disinfectant concentrations for free chlorine, combined chlorines, also known as chloramines, and chlorine dioxide shall be measured:

(1) By the use of diethyl-p-phenylene diamine (DPD) colorimetric test kits; or

(2) By measuring the residual disinfectant concentration under the supervision of an operator certified under Env-Ws 367 by using the methods specified in Table 382-2 below, where X shall indicate the method is approved for measuring the specified disinfectant residual:

Table 382-2

## APPROVED METHODS FOR DISINFECTANT RESIDUAL COMPLIANCE MONITORING

Methodology	Standard method	ASTM method	Residual Measured <sup>1</sup>			
			Free Chlorine	Combined Chlorine	Total Chlorine	Chlorine Dioxide
Amperometric Titration	4500-Cl D	D 1253-86	X	X	X	
Low Level Amperometric Titration	4500-Cl E				X	
DPD Ferrous Titrimetric	4500-Cl F		X	X	X	
DPD Colorimetric	4500-Cl G		X	X	X	
Syringaldazine (FACTS)	4500-Cl H		X			
Iodometric Electrode	4500-Cl I				X	
DPD	4500-ClO <sub>2</sub> D					X
Amperometric Method II	4500-ClO <sub>2</sub> E					X

(i) A certified operator shall monitor the following:

(1) Alkalinity by the methods set forth in 40 CFR 141.89(a);

(2) Bromide by EPA Method 300.0 or EPA Method 300.1;

- (3) TOC by one of the following:
  - a. Standard Method 5310 B;
  - b. Standard Method 5310 C; or
  - c. Standard Method 5310 D; and
- (4) SUVA as follows:
  - a. Prior to the addition of disinfectants/oxidants;
  - b. By separately measuring DOC and UV<sub>254</sub> using the methods specified in this section; and
  - c. DOC and UV<sub>254</sub> shall be collected at the same time and at the same location.
- (j) DOC shall be measured by one of the methods specified in (i)(3), above.
- (k) Prior to analysis, DOC samples shall be filtered through a 0.45 µm pore-diameter filter. Water passed through the filter prior to filtration of the sample shall serve as the filtered blank.
- (l) The filtered blank shall be analyzed for DOC using one of the methods specified in (i) above, and shall be identical to the method used in the analysis prior to filtration.
- (m) The DOC in the filter blank shall be less than 0.5 mg/L.
- (n) Acid may be added to the filter blank in accordance with the following:
  - (1) DOC samples shall be filtered through a 0.45 µm pore-diameter filter prior to acidification;
  - (2) DOC samples shall be acidified to achieve a pH of less than 2.0 by the minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, but no later than 48 hours after sample collection; and
  - (3) Acidified DOC samples shall be analyzed within 28 days.
- (o) DOC samples not acidified shall be analyzed as soon as practical after sampling, but shall not exceed 48 hours from the time the sample was collected.
- (p) UV absorption shall be measured at:
  - (1) At 253.7 nm, which may be rounded to 254 nm (UV<sub>254</sub>); and
  - (2) As follows:
    - a. Samples shall be filtered through a 0.45 µm pore-diameter filter prior to analysis;
    - b. Samples shall be analyzed by using Method 5910 B;
    - c. The pH of UV<sub>254</sub> samples shall not be adjusted; and
    - d. UV<sub>254</sub> samples shall be analyzed as soon as practical after collection but no later than 48 hours after sampling.
- (q) TOC samples shall not be filtered prior to analysis.



(r) TOC samples shall be acidified to achieve a pH of less than 2.0 by the minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, but no later than 24 hours after sample collection.

(s) Acidified TOC samples shall be analyzed within 28 days.

(t) TOC samples not acidified shall be analyzed as soon as practical after collection but no later than 24 hours after sample collection.

(u) pH shall be measured by the methods set forth in 40 CFR 141.23(k)(1).

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.07 Monitoring Requirements.

(a) All samples collected pursuant to this part shall be collected under normal operating conditions.

(b) Multiple wells for which a disinfectant is injected at a single treatment plant shall be considered as one treatment plant for determining the minimum number of TTHM and HAA5 samples required as specified in Env-Ws 382.08.

(c) Multiple wells for which a disinfectant is added at multiple separate points shall be considered as one treatment plant for determining the minimum number of TTHM and HAA5 samples specified in Env-Ws 382.08, in accordance with the following criteria:

(1) Routine monitoring at a frequency specified in Env-Ws 382.08 shall have been performed for a minimum of one year;

(2) Running annual average results shall be less than 0.040 mg/L for TTHM and 0.030 mg/L for HAA5;

(3) For overburden wells, multiple wells shall be located within the same aquifer as determined using the stratified drift aquifer mapping of the U.S. Geological Survey;

(4) For bedrock wells, multiple wells shall be located within an area of less than 4000 feet in radius; and

(5) The water quality of the multiple wells shall be within the following limits:

a. pH within 0.5 units, using one of the analytical methods specified in 40 CFR 141.23(k);

b. Total hardness within 10 mg/L, as CaCO<sub>3</sub>;

c. Alkalinity within 10 mg/L, as CaCO<sub>3</sub>; and

d. Conductivity within 50 umhos/cm<sup>2</sup>.

(d) If running annual average results for multiple wells initially considered as one treatment plant in (c) above, subsequently exceed 0.040 mg/L for TTHM and 0.030 mg/L for HAA5, each well shall then be considered as a separate treatment plant for monitoring purposes, subject to the

routine and reduced monitoring frequency requirements specified in Env-Ws 382.08 and Env-Ws 382.09.

(e) The failure to monitor shall be considered a violation for the entire period covered by the annual average where:

- (1) Compliance is based on a running annual average of monthly or quarterly samples or averages; and
- (2) The system owner's failure to monitor makes it impossible to determine compliance with MCLs or MRDLs.

(f) To qualify for reduced monitoring, a system owner shall use only data collected under the provisions of 40 CFR 141, Subpart M, July 1, 2000 edition.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.08 Routine Monitoring Requirements for TTHM and HAA5.

(a) The owner of a SW/GWUDISW system serving 10,000 or more persons shall:

- (1) Maintain a minimum monitoring frequency by collecting at least 4 water samples per quarter per treatment plant;
- (2) Collect at least 25% of all samples collected each quarter at locations representing maximum residence time in the distribution system; and
- (3) Collect the remaining 75% of all samples at locations representative of at least average residence time in the entire distribution system which shall be based on:
  - a. Number of persons served;
  - b. Sources of water; and
  - c. Treatment methods.

(b) The owner of a SW/GWUDISW system serving 500 to 9,999 persons shall:

- (1) Maintain a minimum monitoring frequency by collecting one water sample per quarter per treatment plant; and
- (2) Collect samples at locations representing maximum residence time in the distribution system.

(c) The owner of a SW/GWUDISW system serving fewer than 500 persons shall:

- (1) Maintain a minimum monitoring frequency by collecting one sample per year per treatment plant during the month of warmest water temperature based on historic water temperature records;
- (2) Collect samples at locations representing maximum residence time in the distribution system; and

(3) If the sample, or average of annual samples, if more than one sample is collected, exceeds the MCL, monitoring shall be increased to one sample per treatment plant per quarter, collected at a point representing maximum residence time in the distribution system until the system meets the reduced monitoring criteria specified in Env-Ws 382.09.

(d) The owner of a system using only groundwater not under direct influence of surface water treated with a chemical disinfectant and serving at least 10,000 persons shall:

(1) Maintain a minimum monitoring frequency by collecting one water sample per quarter per treatment plant; and

(2) Collect samples at locations which represent maximum residence time in the distribution system.

(e) The owner of a system using only ground water not under the direct influence of surface water treated with a chemical disinfectant and serving fewer than 10,000 persons shall:

(1) Maintain a minimum monitoring frequency by collecting one sample per year per treatment plant during the month of warmest water temperature;

(2) Collect samples at locations that represent maximum residence time in the distribution system; and

(3) If the sample, or average of annual samples, if more than one sample is collected, exceeds the MCL, increase monitoring to one sample per treatment plant per quarter, collected at a point representing the maximum residence time in the distribution system, until the system meets the criteria for reduced monitoring specified in Env-Ws 382.09.

(f) If a system owner elects to collect samples more frequently than the minimum required pursuant to this section, at least 25% of all samples collected each quarter, including those taken in excess of the required minimum, shall be collected at locations that represent the maximum residence time of the water in the distribution system.

(g) The remaining samples in (f) above, shall be collected at locations representative of at least average residence time in the distribution system.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.09 Reduced Monitoring for TTHM and HAA5.

(a) After a minimum of one year of routine monitoring, the owner of a SW/GWUDISW system serving at least 10,000 persons may submit a written request to the department to reduce monitoring for TTHM and HAA5.

(b) The written request shall include:

a. The system name;

b. The system EPA number; and

c. A summary of TOC, TTHM and HAA5 sample results.

(c) The department shall respond to the request in writing and reduce the monitoring frequency to one sample per treatment plant per quarter at a distribution system location reflecting maximum residence time if:

- (1) The system owner submits the information identified in (b) above;
- (2) The source water annual average TOC level, before treatment, is less than or equal to 4.0 mg/L;
- (3) The TTHM annual average is less than or equal to 0.040 mg/L; and
- (4) The HAA5 annual average is less than or equal to 0.030 mg/L.

(d) After a minimum of one year of routine monitoring, the owner of a SW/GWUDISW system serving between 500 and 9,999 persons may submit a written request to the department to reduce monitoring for TTHM and HAA5.

(e) The written request shall include the information specified in (b) above.

(f) The department shall respond to the request in writing and reduce the monitoring frequency to one sample per treatment plant per year at a distribution system location reflecting maximum residence time during the month of warmest water temperature if the system meets the criteria specified in (c)(1) through (c)(4).

(g) A SW/GWUDISW system owner serving fewer than 500 persons shall not reduce monitoring to less than one sample per treatment plant per year.

(h) After a minimum of one year of routine monitoring, a system owner serving at least 10,000 persons using only groundwater not under the direct influence of surface water and using a chemical disinfectant may submit a written request to the department to reduce monitoring for TTHM and HAA5.

(i) The written request shall include:

- (1) The system name;
- (2) The system EPA number; and
- (3) A summary of TTHM and HAA5 sample results.

(j) The department shall respond to the request in writing and reduce the monitoring frequency to one sample per treatment plant per year at a distribution system location reflecting maximum residence time during the month of warmest water temperature if:

- (1) The system owner submits the information identified in (i) above;
- (2) The TTHM annual average is less than or equal to 0.040 mg/L; and
- (3) The HAA5 annual average is less than or equal to 0.030 mg/L.

(k) After a minimum of one year of routine monitoring, a system owner serving fewer than 10,000 persons using only groundwater not under the direct influence of surface water and using a chemical disinfectant may submit a written request to the department to reduce monitoring for TTHM and HAA5.

(l) The written request shall include the information specified in (i) above.

(m) The department shall respond to the request in writing and reduce the monitoring frequency to one sample per treatment plant per 3-year monitoring cycle at a distribution system location reflecting maximum residence time during the month of warmest water temperature if:

- (1) The system owner submits the information identified in (i) above;
- (2) The TTHM annual average is less than or equal to 0.040 mg/L and the HAA5 annual average is less than or equal to 0.030 mg/L for 2 consecutive years; or
- (3) The TTHM annual average is less than or equal to 0.020 mg/L and the HAA5 annual average is less than or equal to 0.015 mg/L for one year.

(n) The 3-year monitoring cycle in (m) above, shall begin on January 1 following the quarter in which the system qualifies for reduced monitoring.

(o) A system in (k) above, on reduced monitoring above shall return to routine monitoring as specified in Env-Ws 382.08(e) if:

- (1) The TTHM average is greater than 0.060 mg/L and less than or equal to 0.080 mg/L; or
- (2) The HAA5 average is greater than 0.045 mg/L and less than or equal to 0.060 mg/L.

(p) A system in (k) above on reduced monitoring shall increase monitoring to a collection frequency of one TTHM sample and one HAA5 sample per treatment plant per quarter at points reflecting maximum residence time in the distribution system if:

- (1) The TTHM average is greater than 0.080 mg/L; or
- (2) The HAA5 average is greater than 0.060 mg/L.

(q) After one year of quarterly monitoring, a system owner in (p) above shall be eligible to return to routine monitoring specified in Env-Ws 382.08(e) if:

- (1) The TTHM annual average is less than or equal to 0.060 mg/L; and
- (2) The HAA5 average is less than or equal to 0.045 mg/L.

(r) The owner of a SW/GWUDISW system on reduced monitoring serving greater than 500 persons that exceeds either the TTHM level of 0.060 mg/L or the HAA5 level of 0.045 mg/L shall resume monitoring at the routine monitoring frequency specified in Env-Ws 382.08(a) or (b) in the quarter immediately following the monitoring period in which the system exceeds these TTHM or HAA5 levels.

(s) The owner of a system on reduced monitoring using only groundwater not under the direct influence of surface water and serving at least 10,000 persons that exceeds either the TTHM annual average of 0.060 mg/L or the HAA5 annual average of 0.045 mg/L shall resume monitoring at the routine monitoring frequency specified in Env-Ws 382.08(d) in the quarter immediately following the monitoring period in which the systems exceeds these TTHM or HAA5 levels.

(t) The owner of a system on reduced monitoring using only groundwater not under the direct influence of surface water and serving less than 10,000 persons that exceeds either the TTHM annual

average of 0.080 mg/L or the HAA5 annual average of 0.060 mg/L shall resume monitoring at the routine monitoring frequency specified in Env-Ws 382.08 in the quarter immediately following the monitoring period in which the system exceeds these TTHM or HAA5 levels.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02; and by #8351, eff 5-14-05

Env-Ws 382.10 Monitoring for Chlorite.

(a) An owner of a community or non-transient noncommunity water system using chlorine dioxide for disinfection or for oxidation shall monitor for chlorite as follows:

- (1) At least one daily sample shall be collected at each entrance to the distribution system; and
- (2) For any daily sample that exceeds the chlorite MCL specified in Env-Ws 317.70, the system owner shall:
  - a. Continue to collect at least one daily sample at each entrance to the distribution system as specified above; and
  - b. Collect additional samples in the distribution system the following day at the following locations:
    1. As close to the first customer nearest to the entry point to the distribution system as possible;
    2. In a location representative of average residence time in the distribution system; and
    3. As close to the end of the distribution system as possible, reflecting maximum residence time in the distribution system.

(b) In addition to the daily sampling pursuant to (a) above, a system owner shall collect a 3-sample set once per month at each of the following locations in the distribution system:

- (1) As close to the first customer nearest to the entry point to the distribution system as possible at a location representative of average residence time;
- (2) At a location representative of average residence time in the distribution system; and
- (3) At a location reflecting maximum residence time in the distribution system.

(c) Any additional routine monitoring conducted at the system owner's discretion shall be conducted as 3-sample sets as specified in (b) above.

(d) A system owner may use the results of additional monitoring in (c) above to meet the monthly monitoring requirement in (b) above.

(e) After one year of monthly sampling, a system owner may submit to the department a written request to reduce the chlorite monitoring frequency in (b) above.

(f) The written request shall include:

- (1) The system name;
  - (2) The system EPA number; and
  - (3) A summary of daily and monthly chlorite sampling results for the previous year.
- (g) The department shall respond to the request in writing and decrease the monthly monitoring requirement to one 3-sample set per quarter if the department determines that:
- (1) No individual chlorite sample collected in the distribution system under (b) above, has exceeded the chlorite MCL specified in Env-Ws 317.70; and
  - (2) The system owner has not been required to conduct additional monitoring under (a)(2)above.
- (h) The system may remain on the reduced monitoring schedule unless:
- (1) Any of the 3 individual chlorite samples taken quarterly in the distribution system exceeds the chlorite MCL; or
  - (2) The system owner is required to conduct monitoring under (a)(2)above, at which time the system owner shall revert to routine monitoring as specified in (a) and (b) above.
- (i) Additional routine monitoring conducted at the system owner's discretion shall be at the locations specified in (b) above.
- (j) A system owner may use the results of additional daily monitoring conducted pursuant to (i) above to meet the required monthly monitoring of (b) above.
- (k) Daily chlorite monitoring at the entrance to the distribution system as specified in this section shall not be reduced.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.11 Monitoring for Bromate.

- (a) An owner of a community or non-transient non-community water system using ozone for disinfection or for oxidation shall collect one routine sample per month from each treatment plant in the system.
- (b) The sample shall be collected at the entrance to the distribution system while the ozonation system is operating under normal operating conditions.
- (c) After a minimum of one year of monthly sampling, a system owner may submit to the department a written request to reduce the bromate monitoring frequency.
- (d) The written request shall include:
- (1) The system name;
  - (2) The system EPA number; and
  - (3) A summary of all monthly bromate sampling results.

(e) The department shall notify the system owner of its determination in writing and decrease the monitoring frequency from monthly to quarterly if the department determines that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly bromide results.

(f) A system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is equal to or greater than 0.05 mg/L based upon representative monthly measurements for one year.

(g) If the running annual average source water bromide concentration is greater than or equal to 0.05 mg/L, the system owner shall resume monthly monitoring specified in (a) above.

(h) In order to remain on a reduced monitoring schedule, a system owner shall continue bromide and bromate monitoring in accordance with this section.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.12 Monitoring for Disinfectant Residuals: Chlorine, Chloramine and Chlorine Dioxide.

(a) An owner of a community or non-transient non-community water system using chlorine or chloramines shall conduct routine monitoring for chlorine or chloramines by measuring residual disinfectant levels at the same time and at the same points in the distribution system as total coliform samples are collected as specified in Env-Ws 325.

(b) In lieu of collecting separate samples, a SW/GWUDISW system owner may use the results of residual disinfectant concentration sampling conducted as follows:

- (1) As specified in Env-Ws 380.22(a) for unfiltered water systems; or
- (2) As specified in Env-Ws 380.22(b) for filtered water systems.

(c) An owner of a community, non-transient non-community, or transient non-community water system using chlorine dioxide for disinfection or for oxidation shall collect at least one routine sample per day at the entrance to each distribution system.

(d) For any daily sample that exceeds the chlorine dioxide MRDL specified in Env-Ws 317.80, the system owner shall:

- (1) Continue to collect at least one daily sample at each entrance to the distribution system as specified in (c) above; and
- (2) Collect additional samples in the distribution system the day following the exceedance as follows:
  - a. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system, such as no booster chlorination, the system owner shall collect 3 samples as close to the first customer at the entry to the distribution system as possible, at intervals of at least 6 hours; and



b. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system, such as booster chlorination, the system owner shall collect one sample at each of the following locations:

1. As close to the first customer in the distribution system as possible;
2. In a location within the distribution system representative of average residence time; and
3. At the end of the distribution system, reflecting maximum residence time in the distribution system.

(e) Chlorine, chloramines, and chlorine dioxide monitoring shall not be reduced.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.13 Monitoring Requirements for Disinfection Byproduct Precursors.

(a) An owner of a SW/GWUDISW system using conventional filtration treatment shall conduct routine monitoring at each treatment plant for TOC prior to the point of combined filter effluent turbidity monitoring and representative of the treated water.

(b) A system owner required to monitor for disinfection byproduct precursors under this section shall monitor for TOC in untreated source water at the same time as monitoring for TOC in the treated water.

(c) A system owner shall, at the same time as the source water sample is collected, monitor for alkalinity in the source water prior to any treatment.

(d) A system owner shall collect one paired sample and one source water alkalinity sample per month, per plant, at a time representative of normal operating conditions and influent water quality.

(e) After a minimum of one year of monthly sampling, a SW/GWUDISW system owner may submit a written request to the department to reduce the monitoring frequency.

(f) The request shall include:

- (1) The system name;
- (2) The system EPA number; and
- (3) A summary of all treated water TOC sampling results.

(g) The department shall respond to the request in writing and reduce the monitoring frequency for TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter if:

- (1) The average TOC of treated water is less than 2.0 mg/L for 2 consecutive years; or
- (2) The average TOC of treated water is less than 1.0 mg/L for one year.

(h) A system on reduced monitoring shall revert to routine monitoring as specified in this section in the month following the quarter when the annual average treated water TOC is greater than or equal to 2.0 mg/L.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.14 Disinfectant Byproduct Monitoring Plan.

(a) A system owner required to monitor under this part shall develop and implement a disinfectant byproduct monitoring plan.

(b) The disinfectant byproduct monitoring plan shall include the following:

- (1) The name of system;
- (2) The city or town where the system is located;
- (3) The name, title, and telephone number of the person collecting the samples;
- (4) The system EPA identification number;
- (5) The list of active sources;
- (6) Specific locations and schedules for collecting samples for any requirements under this part; and
- (7) How the system owner will calculate compliance with MCLs, MRDLs, and treatment techniques.

(c) The system owner shall submit a copy of the disinfectant byproduct monitoring plan to the department no later than 60 days prior to initiating monitoring required under Env-Ws 382.04, as follows:

- (1) The owner of a SW/GWUDISW system serving greater than 10,000 people shall submit a copy of the disinfectant byproduct monitoring plan to the department;
- (2) The owner of a SW/GWUDISW system serving fewer than 10,000 shall submit a copy of the disinfectant byproduct monitoring plan to the department no later than November 1, 2003; and
- (3) The owner of a groundwater system shall submit a copy of the disinfectant byproduct monitoring plan to the department no later than November 1, 2003.

(d) The department shall:

- (1) Review the disinfectant byproduct monitoring plan for completeness and for compliance with department rules;
- (2) Approve the disinfectant byproduct monitoring plan if the monitoring plan conforms to department rules and applicable statutes; and
- (3) Notify the system owner in writing of its determination.

(e) The system owner shall modify the disinfectant byproduct monitoring plan as required by the department, prior to the effective date specified in Env-Ws 382.04.

(f) A water system providing water to a consecutive system under the provisions of Env-Ws 321.02 shall include the entire distribution system, including the consecutive system, in the monitoring plan.

(g) The system owner shall update the disinfectant byproduct monitoring plan as necessary to reflect current information and make it available for inspection by the department or general public no later than 30 days following the applicable compliance dates specified in Env-Ws 382.04.

(h) The system owner shall monitor in accordance with the disinfectant byproduct monitoring plan as approved by the department.

(i) The failure of a system owner to monitor in accordance with the disinfectant byproduct monitoring plan shall be deemed to be a violation.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.15 Compliance Determination.

(a) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system owner fails to monitor for TTHM, HAA5, or bromate, this failure to monitor shall be deemed a monitoring violation for the entire period covered by the annual average.

(b) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system owner's failure to monitor makes it impossible to determine compliance with MRDLs for chlorine and chloramines, this failure to monitor shall be deemed as a monitoring violation for the entire period covered by the annual average.

(c) All samples collected and analyzed under the provisions of this part shall be included in determining compliance, even if that number is greater than the minimum required.

(d) If, during the first year of monitoring under this part, any individual quarter's average shall cause the running annual average of that system to exceed the MCL, the system shall be deemed as out of compliance at the end of that quarter.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.16 Compliance Determination for TTHM and HAA5.

(a) For a system owner monitoring quarterly:

(1) Compliance with MCLs specified in Env-Ws 317.70 shall be calculated using a running annual average, computed quarterly, of quarterly averages of all samples collected by the system owner pursuant to Env-Ws 382.08; and

(2) If the running annual average of quarterly averages covering any consecutive 4-quarter period exceeds the MCL, the system owner shall:

a. Be deemed to be in violation of the MCL;

- b. Notify the public pursuant to Env-Ws 351; and
  - c. Report to the department pursuant to Env-Ws 382.21.
- (b) For a system owner monitoring less frequently than quarterly:
- (1) A system owner shall be in compliance with the MCL if the average of samples collected that year under Env-Ws 382.08 does not exceed the MCLs specified in Env-Ws 317.70; and
  - (2) If a system owner in (1) above, exceeds the MCL, the system owner shall increase monitoring to once per quarter per treatment plant.
- (c) A system in (b) above shall not be in violation of the MCL until it has completed one year of quarterly monitoring unless the result of fewer than 4 quarters of monitoring will cause the running annual average to exceed the MCL.
- (d) If the result of fewer than 4 quarters of monitoring will cause the running annual average to exceed the MCL, the system shall be deemed to be in violation of the MCL at the end of that particular quarter.
- (e) A system owner required to increase monitoring frequency to quarterly pursuant to (b)(2), above shall:
- (1) Calculate compliance by including the sample triggering the increased monitoring in addition to the following 3 quarters of monitoring; and
  - (2) If the running annual average of quarterly averages covering any consecutive 4-quarter period exceeds the MCL:
    - a. Be deemed to be in violation of the MCL and shall:
    - b. Notify the public pursuant to Env-Ws 351; and
    - c. Report to the department pursuant to Env-Ws 382.21.
- (f) If a system owner monitoring quarterly fails to complete 4 consecutive quarters of monitoring, compliance with the MCL for the last 4-quarter compliance period shall be based on an average of available data.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.17 Compliance Determination for Bromate.

- (a) Compliance shall be determined based on:
- (1) A running annual average, computed quarterly, of monthly samples; or
  - (2) For months in which the system owner collects more than one sample, the average of all samples collected during the month collected by the system owner as prescribed by Env-Ws 382.11.
- (b) If the average of samples covering any consecutive 4-quarter period exceeds the MCL, the system owner shall:

- (1) Be deemed to be in violation of the MCL;
- (2) Notify the public pursuant to Env-Ws 351; and
- (3) Report to the department pursuant to Env-Ws 382.21.

(c) If a system owner fails to complete 12 consecutive months of monitoring, compliance with the MCL for the last 4-quarter compliance period shall be based on an average of the available data.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.18 Compliance Determination for Chlorite.

(a) Compliance determination for chlorite shall be based on an average of each 3-sample set collected in the distribution system pursuant to Env-Ws 382.10.

(b) If the average of any 3-sample set exceeds the MCL, the system owner shall:

- (1) Be deemed to be in violation of the MCL;
- (2) Notify the public pursuant to Env-Ws 351; and
- (3) Report to the department pursuant to Env-Ws 382.21.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.19 Compliance Determination for Chlorine, Chloramine, and Chlorine Dioxide.

(a) Compliance with chlorine and chloramine shall be as follows:

(1) Compliance shall be based on a running annual average, computed quarterly, of monthly averages of all samples collected by the system owner pursuant to Env-Ws 382.12; and

(2) If the average covering any consecutive 4-quarter period exceeds the MRDL, the system owner shall be:

- a. Deemed to be in violation of the MRDL;
- b. Notify the public pursuant to Env-Ws 351; and
- c. Report to the department pursuant to Env-Ws 382.21.

(b) If a system changes between the use of chlorine and chloramines for residual disinfection during the year, compliance shall be determined by including all monitoring results for both chlorine and chloramines.

(c) Reports submitted pursuant to Env-Ws 382.21 shall clearly indicate which residual disinfectant was analyzed for each sample.

(d) Compliance with chlorine dioxide shall be based on consecutive daily samples collected by the system owner pursuant to Env-Ws 382.12(c).

- (e) An acute violation for chlorine dioxide shall occur when:
  - (1) Any daily sample collected at the entrance to the distribution system exceeds the MRDL; and
  - (2) One or more of the 3 samples collected in the distribution system pursuant to Env-Ws 382.12(d) exceed the MRDL.
- (f) A system owner in (e) above, shall:
  - (1) Immediately take corrective action to lower the level of chlorine dioxide below the MRDL;
  - (2) Notify the public pursuant to Env-Ws 351 using the procedures for acute health risks specified in Env-Ws 351.03; and
  - (3) Report to the department pursuant to Env-Ws 382.21.
- (g) The failure to collect the 3 sample-set as specified in Env-Ws 382.12 in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system shall be deemed an acute violation.
- (h) A system owner in (g) above shall:
  - (1) Notify the public in accordance with the acute violation public notice as specified in Env-Ws 351.03; and
  - (2) Report to the department pursuant to Env-Ws 382.21.
- (i) A nonacute violation for chlorine dioxide shall occur when:
  - (1) Any 2 consecutive daily samples collected at the entrance to the distribution system exceed the MRDL; and
  - (2) All distribution system samples collected are below the MRDL.
- (j) A system owner in (i) above shall:
  - (1) Take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling;
  - (2) Notify the public using the procedures for nonacute health risks specified in Env-Ws 351.04 and Env-Ws 351.05; and
  - (3) Report to the department pursuant to Env-Ws 382.21.
- (k) If the system fails to monitor for chlorine dioxide at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system as specified in Env-Ws 382.12(d)(1), the system shall be deemed to be in violation of the MRDL.
- (l) The system owner in (k) above, shall:
  - (1) Notify the public of the violation using the provisions for nonacute violations specified in Env-Ws 351.04 and Env-Ws 351.05; and

(2) Report to the department pursuant to Env-Ws 382.21.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.20 Compliance Determination for Disinfection Byproduct Precursors.

(a) Compliance shall be determined as specified in Env-Ws 382.23.

(b) A system owner may begin monitoring to determine whether Step 1 TOC removals can be met 12 months prior to the system's applicable compliance date.

(c) A system owner who does not monitor during the period in (b) above, and then determines in the first 12 months after the compliance date that the system cannot meet the Step 1 TOC removal requirements specified in Env-Ws 382.10(b)(2) shall:

(1) Apply for alternate minimum TOC removal, also known as Step 2 TOC removal requirements;

(2) Not be eligible for retroactive approval of alternate minimum TOC removal requirements as allowed pursuant to Env-Ws 382.23(f) through (h); and

(3) Be deemed to be in violation of a treatment technique requirement specified in Env-Ws 382.22.

(d) A system owner may submit a written request to the department for approval of alternate minimum TOC removal, Step 2, requirements, as specified in Env-Ws 382.24, any time after the compliance date.

(e) A system owner required to meet Step 1 TOC removals, if the value calculated under Env-Ws 382.23 is less than 1.00, shall:

(1) Be in violation of the treatment technique requirements;

(2) Notify the public pursuant to Env-Ws 351; and

(3) Report to the department pursuant to Env-Ws 382.21.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.21 Reporting and Recordkeeping Requirements.

(a) Except where a shorter period is specified, a system owner who is required to sample quarterly or more frequently than quarterly under this part shall report sample results to the department within 10 days after the end of each quarter in which samples were collected on forms provided by the department.

(b) A system owner who is required to sample under this part less frequently than quarterly shall report sample results to the department within 10 days after the end of each monitoring period in which samples were collected on forms provided by the department.

(c) A system owner required to monitor for TTHM and HAA5 pursuant to Env-Ws 382.08 on a quarterly or more frequent basis shall report the following to the department:

- (1) The number of samples collected during the last quarter;
- (2) The location, date, and result of each sample collected during the last quarter;
- (3) The average of all samples collected during the last quarter;
- (4) The annual average of the quarterly averages for the last 4 quarters; and
- (5) Whether the MCL was violated as calculated in Env-Ws 382.16.

(d) A system owner monitoring for TTHMs and HAA5 pursuant to Env-Ws 382.08 and Env-Ws 382.09 less frequently than quarterly, but at least annually, shall report the following to the department:

- (1) The number of samples collected during the last year;
- (2) The location, date, and result of each sample collected during the last monitoring period;
- (3) The average of all samples collected during the last year; and
- (4) Whether the MCL was violated as calculated in Env-Ws 382.16.

(e) A system owner monitoring for TTHMs and HAA5 pursuant to Env-Ws 382.08 and Env-Ws 382.09 less frequently than annually shall report the following to the department:

- (1) The location, date, and result of each sample collected; and
- (2) Whether the MCL was violated as calculated in Env-Ws 382.16.

(f) A system owner monitoring for chlorite pursuant to Env-Ws 382.10 shall report the following:

- (1) The number of entry point samples collected each month for the last 3 months;
- (2) The location, date, and result of each sample collected at the entry point and distribution system during the last quarter;
- (3) For each month in the reporting period, the average of all samples collected in each 3-sample set collected in the distribution system;
- (4) Whether the system was in violation of the MCL as specified in Env-Ws 382.18;
- (5) If the system in (4) above, was in violation, the month the system was in violation; and
- (6) How many times the violation occurred during each month the system was in violation.

(g) A system owner monitoring for bromate pursuant to Env-Ws 382.11 shall report the following to the department:

- (1) The number of samples collected during the last quarter;
- (2) The location, date, and result of each sample collected during the last quarter;
- (3) The average of the monthly averages of all samples collected in the last year; and



(4) Whether the MCL was violated as specified in Env-Ws 382.17.

(h) A system owner monitoring for chlorine or chloramines pursuant to Env-Ws 382.12 shall report the following to the department:

- (1) The number of samples collected during each month of the last quarter;
- (2) The monthly average of all samples collected in each month for the last 12 months;
- (3) The average of the monthly averages for the last 12 months; and
- (4) Whether the MRDL was violated as specified in Env-Ws 382.19.

(i) A system owner monitoring for chlorine dioxide pursuant to Env-Ws 382.12 shall report the following to the department:

- (1) The dates, results, and locations of samples collected during the last quarter;
- (2) Whether the MRDL was violated as specified in Env-Ws 382.19;
- (3) Whether the MRDL was exceeded in any 2 consecutive daily samples; and
- (4) Whether the resulting violation was acute or non-acute as specified in Env-Ws 382.19.

(j) A system owner monitoring monthly or quarterly for TOC under the requirements of Env-Ws 382.13 and required to meet the enhanced coagulation or enhanced softening requirements of Env-Ws 382.23 shall report the following to the department:

- (1) The number of paired samples collected during the last quarter;
- (2) The location, date, and results of each paired sample and associated alkalinity collected during the last quarter;
- (3) For each month in the reporting period that paired samples were collected:
  - a. The average of the percent reduction of TOC for each paired sample; and
  - b. The required TOC percent removal;
- (4) Calculations for determining compliance with the TOC percent removal requirements, as provided in Env-Ws 382.25; and
- (5) Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements of Env-Ws 382.23 for the last 4 quarters.

(k) A system owner monitoring monthly or quarterly for TOC under the requirements of Env-Ws 382.13 and meeting one or more of the alternative compliance, Step 2 criteria specified in Env-Ws 382.24 shall report the following to the department:

- (1) The alternative compliance criterion that the system is using;
- (2) The number of paired samples collected during the last quarter;
- (3) The location, date, and result of each paired sample and associated alkalinity collected during the last quarter;

- (4) The running annual average based on:
  - a. Monthly averages or quarterly samples of source water TOC for a system meeting a criterion in Env-Ws 382.22(b)(1) and (3); or
  - b. Monthly averages or quarterly samples of treated water TOC for a system meeting the criteria in Env-Ws 382.22(b)(2);
- (5) The running annual average based on:
  - a. Monthly averages or quarterly samples of source water SUVA for a system meeting the criteria in Env-Ws 382.22(b)(5); or
  - b. Monthly averages or quarterly samples of treated water SUVA for systems meeting the criterion in Env-Ws 382.22(b)(6);
- (6) The running annual average of:
  - a. Source water alkalinity for a system meeting the criteria in Env-Ws 382.22(b)(7); and
  - b. Treated water alkalinity for systems meeting the criteria in Env-Ws 382.22(g)(1);
- (7) The running annual average for TTHM and HAA5 for systems meeting the criteria in Env-Ws 382.22(b)(4);
- (8) The running annual average of the amount of magnesium hardness removal as  $\text{CaCO}_3$ , in mg/L, for systems meeting the criterion in Env-Ws 382.22(g)(2); and
- (9) Whether the system is in compliance with the particular alternative compliance criterion in Env-Ws 382.22(b) or (g).

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02

Env-Ws 382.22 Treatment Technique for Control of Disinfection Byproduct Precursors.

(a) The owner of a SW/GWUDISW system using conventional filtration treatment shall use enhanced coagulation or enhanced softening as treatment techniques to control disinfection byproduct precursors in drinking water treatment and distribution systems.

(b) A SW/GWUDISW system owner using conventional filtration treatment shall operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels specified in Env-Ws 382.23 or Env-Ws 382.24 unless the system achieves at least one of the following criteria:

- (1) The system's source water TOC level is less than 2.0 mg/L, calculated quarterly as a running annual average;
- (2) The system's treated water TOC level is less than 2.0 mg/L, calculated quarterly as a running annual average;

- (3) The system's source water SUVA prior to any treatment and measured pursuant to Env-Ws 382.06 is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average;
  - (4) The system's finished water SUVA measured pursuant to Env-Ws 382.06 is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average;
  - (5) The system meets the following criteria:
    - a. The system uses only chlorine for primary disinfection and for the maintenance of a residual in the distribution system;
    - b. The TTHM running annual averages shall be no greater than 0.040 mg/L; and
    - c. The HAA5 running annual averages shall be no greater than 0.030 mg/L; or
  - (6) The system meets the following criteria:
    - a. Source water TOC level, measured pursuant to Env-Ws 382.06, is less than 4.0 mg/L, calculated quarterly as a running annual average;
    - b. The source water alkalinity is greater than 60 mg/L, as  $\text{CaCO}_3$ , calculated quarterly as a running annual average; and
    - c. Either the TTHM and HAA5 running annual average shall be no greater than 0.040 mg/L and 0.030 mg/L respectively or the system owner submits to the department the following:
      1. A clear and irrevocable financial commitment no later than the effective date of compliance specified in Env-Ws 382.04 to use technologies that will limit the levels of TTHMs and HAA5 to no more than 0.040 mg/L and 0.030 mg/L respectively; and
      2. A schedule containing milestones and periodic progress reports for installation and operation of appropriate technologies no later than the dates specified in Env-Ws 382.04.
  - (7) Systems shall still comply with monitoring requirements in Env-Ws 382.13.
- (c) The department shall:
- (1) Review the financial commitment and schedule specified in (6)c. above;
  - (2) Approve the proposed schedule if the monitoring plan conforms to department rules and applicable statutes; and
  - (3) Notify the system owner in writing of its determination.
- (d) The technologies specified in (6)c. above, shall be installed and operating prior to June 30, 2005.
- (e) Failure to install and operate these technologies by the date in the department- approved schedule shall constitute a violation of Env-Ws 300.

(f) If a system owner practicing enhanced softening cannot achieve the TOC removals specified in Env-Ws 382.23(a), the system owner may achieve compliance with TOC removals by using:

- (1) Softening that results in lowering the treated water alkalinity to less than 60 mg/L, as  $\text{CaCO}_3$ , measured monthly pursuant to Env-Ws 382.06 and calculated quarterly as a running annual average; or
- (2) Softening that results in removing at least 10 mg/L of magnesium hardness, as  $\text{CaCO}_3$ , measured monthly and calculated quarterly as an annual running average.

(g) A system owner identified in (f) above, shall comply with the monitoring requirements specified in Env-Ws 382.13.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02; amd by #8351, eff 5-14-05

Env-Ws 382.23 Enhanced Coagulation and Enhanced Softening Step 1 Performance Requirements.

(a) A system owner shall achieve the percent reduction of TOC specified in Table 382-3:

Table 382-3

STEP 1 REQUIRED REMOVAL OF TOC BY ENHANCED COAGULATION  
AND ENHANCED SOFTENING FOR SW/GWUDISW SYSTEMS  
USING CONVENTIONAL TREATMENT

Source-water TOC, mg/L	Source-water alkalinity, mg/L as $\text{CaCO}_3$		
	0-60	61 - 120	Greater than 120
Greater than 2.0-4.0	35.0%	25.0%	15.0%
Greater than 4.0-8.0	45.0%	35.0%	25.0%
Greater than 8.0	50.0%	40.0%	30.0%

(b) The Step 1 TOC reductions specified in (a), above shall be:

- (1) Achieved between the source water and the combined filter effluent; and
- (2) Based upon specified source water parameters measured in accordance with Env-Ws 382.06(g).

(c) A system owner unable to comply with Step 1 TOC reductions in (b)(1), above, may submit to the department a written request for approval of the alternative Step 2 TOC reduction specified in (f) below.

(d) The written request shall include the following information:

- (1) The system name;
- (2) The system EPA identification number; and

(3) The most recent bench- or pilot-scale study.

(e) The department shall approve the request if the bench or pilot test study concludes that the system is unable to meet Step 1 TOC removal requirements.

(f) A system owner practicing softening shall meet the step 1 TOC reductions in the Source Water Alkalinity Greater than 120 mg/L column of Table 382-3 for the specified source water TOC.

(g) A system owner meeting at least one of the conditions specified in Env-Ws 382.22(b) shall not be required to operate with enhanced coagulation.

(h) A softening system meeting one of the alternative compliance criteria in Env-Ws 382.22(f) shall not be required to operate with enhanced softening.

(i) The owner of a SW/GWUDISW system owner using conventional treatment that cannot achieve the Step 1 TOC removals required by (a) above, due to water quality parameters or operational constraints, shall submit a written request to the department, within 3 months of the failure to achieve the TOC removals, for approval by the department of alternative minimum TOC, Step 2, removal requirements.

(j) The request shall include the items specified in Env-Ws 382.24(b).

(k) The department shall approve the request if the bench or pilot test study concludes that the system is unable to meet Step 1 TOC removal requirements.

(l) If the department approves the alternative minimum TOC removal, Step 2, requirements, the department shall make those requirements retroactive for the purposes of determining compliance provided the requirements of Env-Ws 382.20(b) and (c) are met. Until the department approves the alternate minimum TOC removal, step 2, requirements, the system shall meet the step 1 TOC removal requirements contained in (a) above.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02; and by #8351, eff 5-14-05

Env-Ws 382.24 Alternate Minimum TOC Removal, Step 2 Requirements.

(a) A system owner using enhanced coagulation may submit to the department a written request for approval of alternative minimum TOC removal, Step 2, requirements.

(b) The written request shall include:

- (1) The system name;
- (2) The system EPA number; and
- (3) Results of bench-or pilot-scale testing.

(c) The department shall use the bench-scale or pilot-scale testing results to determine the alternate enhanced coagulation level. For purposes of this section, "alternate enhanced coagulation level" means coagulation at a coagulant dose and pH as determined by the method described in (g) and (h) of this section such that an incremental addition of 10 mg/L of alum, as aluminum, or an equivalent amount of ferric salt, results in a TOC removal of less than or equal to 0.3 mg/ L.

(d) The percent removal of TOC at the point determined in (c) above on the TOC removal versus coagulant dose curve shall be the minimum TOC removal required for the system.

(e) This minimum requirement shall supersede the minimum TOC removal required by Table 382-3.

(f) Failure to achieve department-set alternative minimum TOC removal levels shall be a violation of Env-Ws 300.

(g) Bench- or pilot-scale testing of enhanced coagulation shall be conducted by using representative water samples and adding 10 mg/L increments of alum, as aluminum, or equivalent amounts of ferric salt, until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in Table 382-4 below:

Table 382-4

## ENHANCED COAGULATION STEP 2 TARGET pH

Alkalinity (mg/L as CaCO <sub>3</sub> )	Target pH
0-60	5.5
61-120	6.3
121-240	7.0
>240	7.5

(h) For waters with alkalinities of less than 60 mg/L for which addition of small amounts of alum or equivalent addition of iron coagulant lowers the pH below 5.5 before significant TOC removal occurs, the system shall add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added, as aluminum, or equivalent addition of iron coagulant, is reached.

(i) The system owner may operate at any coagulant dose or pH necessary, consistent with Env-Ws 300, to achieve the minimum TOC percent removal under Env-Ws 382.23(i).

(j) If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose, as aluminum, at all dosages of alum, or equivalent addition of iron coagulant, the water shall be deemed to contain TOC not amenable to enhanced coagulation.

(k) A system owner in (j) above, may submit to the department a written request for a waiver of enhanced coagulation requirements.

(l) The written request shall include:

- (1) The system name;
- (2) The system EPA number; and
- (3) The results of bench-test studies or pilot-test studies described in (g) and (h) above.

(m) The department shall approve the waiver of enhanced coagulation requirements if the department determines that the water contains TOC not amenable to enhanced coagulation. For purposes of this section, "not amenable to enhanced coagulation" means that the TOC removal is reliably and consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02; amd by #8351, eff 5-14-05

Env-Ws 382.25 Compliance Calculations.

(a) The owner of a SW/GWUDISW system owner other than those meeting the criteria identified in Env-Ws 382.22 shall comply with requirements contained in Env-Ws 382.23.

(b) A system owner shall calculate compliance quarterly.

(c) The quarterly compliance period shall begin after the system owner has collected 12 months of data, by determining an annual average using the following method:

(1) Determine actual monthly TOC percent removal, equal to:

$$1 - (\text{treated water TOC} / \text{source water TOC}) \times 100;$$

(2) Determine the required monthly TOC percent removal, from either Table 382-3 or, if a SW/GWUDISW, from Env-Ws 382.24;

(3) Divide the value in (1), above, by the value in (2), above; and

(4) Add together the results of (3), above, for the last 12 months and divide by 12.

(d) If the value calculated in (c), above is less than 1.00, the system shall not be in compliance with the TOC percent removal requirements.

(e) In any month that the system's treated or source water TOC level, measured according to Env-Ws 382.06, is less than 2.0 mg/L, the system owner may assign a monthly value of 1.0, in lieu of the value calculated in (c)(3) above, when calculating compliance under the provisions of (a) and (b) above.

(f) In any month that a system owner practicing softening removes at least 10 mg/L of magnesium hardness, as  $\text{CaCO}_3$ , the system owner may assign a monthly value of 1.0, in lieu of the value calculated in (c)(3) above, when calculating compliance under the provisions of (a) above.

(g) In any month that the system's source water SUVA, measured according to Env-Ws 382.06(i)(4) prior to any treatment is less than or equal to 2.0 L/mg-m, the system owner may assign a monthly value of 1.0, in lieu of the value calculated in (c)(3) above, when calculating compliance under the provisions of (a) and (b) above.

(h) In any month that the system's finished water SUVA, measured according to Env-Ws 382.06(i)(4), is less than or equal to 2.0 L/mg-m, the system owner may assign a monthly value of 1.0, in lieu of the value calculated in (c)(3) above, when calculating compliance under the provisions of (a) and (b) above.

(i) In any month that a system owner practicing enhanced softening lowers alkalinity below 60 mg/L, as  $\text{CaCO}_3$ , the system owner may assign a monthly value of 1.0, in lieu of the value calculated in (c)(3) above, when calculating compliance under the provisions of (a) and (b) above.

Source. (See third Revision Note at chapter heading Env-Ws 300); #7735, eff 8-2-02; amd by #8351, eff 5-14-05

## APPENDIX

Rule Section(s)	State Statute(s) Implemented	Federal Statute(s)/ Regulation(s) Implemented
Env-Ws 382	RSA 485:3, I(c); 485:41	40 CFR 141 Subpart L